



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/699,042	10/31/2003	John Korbler	108430.035A	1203

34132 7590 09/27/2004

COZEN O'CONNOR, P.C.
1900 MARKET STREET
PHILADELPHIA, PA 19103-3508

EXAMINER

MARKOFF, ALEXANDER

ART UNIT	PAPER NUMBER
----------	--------------

1746

DATE MAILED: 09/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/699,042

Applicant(s)

KORBLER ET AL.

Examiner

Alexander Markoff

Art Unit

1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10/31/03-7/22/04.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2/4/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 9 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claim is indefinite because the term "the third acoustical impedance value" lacks proper antecedent basis.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 4, 5, 9, 13, 16 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Oshinowo (US Patent No 6,189,552).

Oshinowo teaches a method and an apparatus as claimed.

The apparatus comprises a chamber with a treatment fluid, an acoustical energy source (22), a first transmission layer (3) made of quartz or stainless steel or aluminum, and a second transmission layer made of PFA.

The method comprises treatment substrates with the fluid and acoustical energy transmitted to the fluid through the layers.

5. Claims 1, 2, 4, 9, 10, 11, 12-14, 16, and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Beck et al (US Patent No 6,222,305).

Beck et al teach a method and apparatus as claimed. See entire document, especially Figures 1, 2, 5, 6 and the related description.

The apparatus comprises a process chamber, an acoustical energy source, which is piezoelectric crystal, and an acoustical stack comprising resonator made from quartz or stainless steel and two metal layers made of silver and chromium or nickel or their alloys.

The method comprises treatment substrates with the fluid and acoustical energy transmitted to the fluid through the layers and the resonator.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 2, 6-8, 14, and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oshinowo in view of Roberson, Jr. et al (US Patent NO 4,977,688).

Oshinowo teaches a process chamber made of quartz or metals, such as stainless steel or aluminum, and covered by protective layer of PFA.

The document is concerned about cost of the chamber, longer service life of the chamber and reliable processing even in the case when the protective layer is damaged. See entire document, especially column 1, line 46 – column 2, line 58.

It is not clear from the document whether or not the combination of metal wall base and quartz walls is recommended by the document, but it is believed that the teaching presented in column 2, lines 35-58 encompasses this. Moreover, the combination of metal shield with quartz walls is known in the art processing semiconductor wafers. See Roberson, Jr. et al, column 5, lines 2-10.

Roberson, Jr. et al recommend such shield to protect from accident of the quartz treatment chamber.

It would have been obvious to an ordinary artisan at the time the invention was made to provide a method and apparatus of Oshinowo with quartz walls with aluminum or stainless steel shield in order to increase the service life of the apparatus, reduce cost of the apparatus and prevent hazard connected with possible breaking of the quartz chamber.

10. Claims 3, 5, 10-12, 15 and 21-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oshinowo in view of Roberson, Jr. et al as it applied above, further in view of the state of the prior art admitted by the applicants in the specification.

Oshinowo modified by the teaching of Roberson, Jr. et al teaches the claimed invention except for recitation of piezoelectric crystals as a part of the acoustical energy source, specific treatment fluids and recitation of impedance of the process fluid.

However, the applicants have admitted in the specification (pages 2-4) that the use of piezoelectric transducers and the use of the claimed processing fluids were conventional in the art.

It would have been obvious to an ordinary artisan at the time the invention was made to employ a conventional transducers for their primary purpose in the Oshinowo and to conduct conventional semiconductor substrate treatment processes utilizing the modified apparatus of Oshinowo with reasonable expectation of adequate results, because Oshinowo does not limit the disclosure to any specific type of the transducer

Art Unit: 1746

and because Oshinowo is designed to conduct treatment of semiconductor substrates and is not limited to any specific treatment process.

With respect to claims 11, 12, 25 and 26: it would have been obvious to an ordinary artisan at the time the invention was made that limitations of claims 11 and 25 would be met for the embodiment of modified Oshinowo utilizing piezoelectric transducer and stainless steel chamber with protective PFA layer and that limitations of claims 12 and 26 would be met for the embodiment of modified Oshinowo utilizing piezoelectric transducer and aluminum chamber with protective PFA layer this is because the applicants admitted that the piezoelectric transducers conventionally have impedance value of 34 Mrayls. This value is between the values for aluminum and stainless steel.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander Markoff whose telephone number is 571-272-1304. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on 571-272-1414. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1746

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Alexander Markoff
Primary Examiner
Art Unit 1746

am